DIABETES SCREENING GUIDELINES

Washington State Clinical Laboratory Advisory Council
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FOR EDUCATIONAL PURPOSES ONLY

The individual clinician is in the best position to determine which tests are most appropriate for a particular patient.

GENERAL POPULATION

Who should be screened?*

General screening is recommended at 3 year intervals only for those patient populations known to be at high risk. High risk includes one or more of the following: ≥ 45 years of age, has a sibling or parent with diabetes, obesity (≥ 20% over desired body weight), are members of a high-risk ethnic population, have delivered a baby weighing > 9 lbs. or previously diagnosed with GDM, are hypertensive (≥ 140/90mmHg in adults), have an HDL cholesterol level ≤35 mg/dl and/or a triglyceride level ≥ 250 mg/dl, or on previous testing had impaired glucose tolerance (IGT) or an impaired fasting glucose (IFG).**

Screening Procedure (Capillary vs. Venous Blood):

Testing of blood with a blood glucose monitoring device intended for home use is not considered a diagnostic procedure. A whole blood screening test must be confirmed two more times using plasma from a venous sample.

1. **Fasting Plasma Glucose (FPG) ≥126 mg/dl (7.0 mmol/l).** Fasting is defined as no consumption of food or beverage other than water for at least 8 hours.

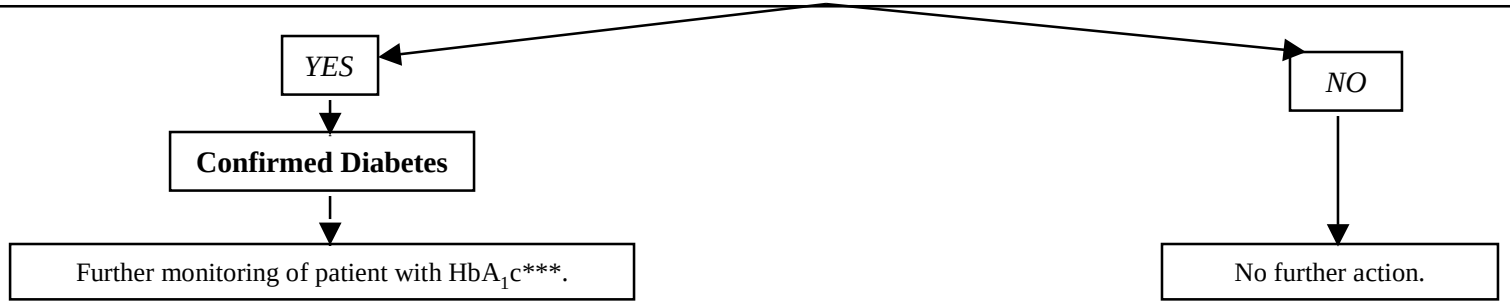
or

2. **2 hour plasma glucose ≥ 200mg/dl (11.1 mmol/dl) during an OGTT.** [This measure (OGTT) is not recommended for routine clinical use.]
   The test requires the use of a glucose load containing the equivalent of 75-g anhydrous glucose dissolved in water.

or

3. **Symptoms of diabetes plus casual (random) plasma glucose concentration ≥ 200mg/dl (11.1 mmol/dl)**
   Casual (random) is defined as *any time* of day without regard to time since last meal. The classic symptoms of diabetes include polyuria, polydipsia, and unexplained weight loss.

In the absence of unequivocal hyperglycemia with symptoms, these criteria must be confirmed by repeat testing (preferably the FPG) on a subsequent day.



* Exclude those who have no high risk indicators.

** Non-diabetic individuals with an FPG ≥110 mg/dl (6.1mmol/l) but <126 mg/dl (7.0 mmol/l) are considered to have impaired fasting glucose (IFG), and those with 2-h values in the OGTT ≥140mg/dl (7.8 mmol/l) but < 200 mg/dl (11.1 mmol/l) are defined as having impaired glucose tolerance (IGT). Both IFG and IGT are risk factors for future diabetes.

*** The method of testing should be one certified by the National Glycohemoglobin Standardization Program (NGSP).

REFERENCES:

1. National Diabetic Data Group: Classification and diagnosis of diabetes mellitus and other categories of glucose intolerance. *Diabetes* 28: 1039-1057, 1979.
2. Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. *Diabetes Care,* Volume 23 (Supplement 1), January 2000: S2, S4, S20 and S77.
3. Metzger BE, Coustan DR (Eds.): Proceeding of the Fourth International Work-shop-Conference on Gestational Diabetes Mellitus. *Diabetes Care,* Volume 21, Supplement 2, B161-7, 1998.
4. M.W. Carpenter & Donald R. Coustan, Diagnosis of Gestational Diabetes. *Diabetes Care,* Volume 21, Supplement 2, B5-8, 1998
5. American Diabetes Association Recommendations:http://journal.diabetes.org/CareSup1Jan00.htm

GESTATIONAL DIABETES MELLITUS

Who should be screened?

- Risk assessment for Gestational Diabetes Mellitus (GDM) should be undertaken at the first prenatal visit.
- Women with clinical characteristics consistent with a high risk of GDM (marked obesity, personal history of GDM, glycosuria, or a strong family history of diabetes) should undergo glucose testing as soon as feasible. If they are not found to have GDM at that initial screening, they should be retested between 24 and 28 weeks of gestation.
- Women of average risk should be tested at 24 - 28 weeks gestation.
- Women of low risk status require no glucose testing, but this category is limited to those women meeting *all* of the following: <25 years of age, normal weight before pregnancy, member of an ethnic group with a low prevalence of GDM, no sibling or parent known to have diabetes, no history of abnormal glucose tolerance *and* no history of poor obstetric outcome.

SCREENING FOR GESTATIONAL DIABETES MELLITUS

A fasting plasma glucose level ≥ 126 mg/dl (7.0mmol/l) or a casual (random) plasma glucose level ≥ 200 mg/dl (11.1 mmol/l)
that are confirmed on a subsequent day meet the threshold for the diagnosis of diabetes and precludes the need for any glucose challenge.

One -Step Approach:
Perform a diagnostic oral glucose tolerance test (OGTT) without prior plasma or serum glucose screening. This approach may be cost-effective in high-risk patients or populations. Use either the 75 gram or 100 gram OGTT described below.

Two-Step Approach:
Perform an initial screening by measuring the plasma or serum glucose concentration 1 hour after a 50 gram oral glucose load. Those who exceed the glucose threshold value of >140mg/dl (7.8mmol/l) identifies approximately 80% of women with GDM. Those who exceed the glucose threshold value of >130 mg/dl (7.2 mmol/l) identifies approximately 90% of women with GDM. Perform either the 75 gram or 100 gram OGTT on those who fail the initial screening.

100-gram Oral Glucose Load OGTT (modified criteria)

Sample	mg/dl	mmol/l
Fasting	95	5.3
1-hr	180	10.0
2-hr	155	8.6
3-hr	140	7.8

Two or more of the venous plasma results must be met or exceeded for a positive diagnosis. The test should be done in the morning after an overnight fast of 8 - 14 hours and after at least 3 days of unrestricted diet (≥150gms carbohydrates per day) and unlimited physical activity. The subject should remain seated and should not smoke throughout the test.

75-gram Oral Glucose Load OGTT

Sample	mg/dl	mmol/l
Fasting	95	5.3
1-hr	180	10.0
2-hr	155	8.6

Two or more of the venous plasma concentrations must be met or exceeded for a positive diagnosis. The test should be done in the morning after an overnight fast of 8 - 14 hours and after at least 3 days of unrestricted diet (≥150gms carbohydrates per day) and unlimited physical activity. The subject should remain seated and should not smoke throughout the test. **(This test is not as well validated as the 100g OGTT.)**